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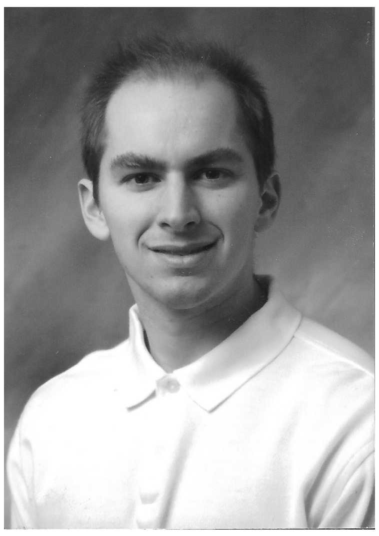
Information Science & Technology Student/Postdoc Seminar



Andrew Marshall
Ray W. Herrick Laboratories
Purdue University

"Human Response to Supersonic Aircraft Noise - the Development of a Startle Model"

Wednesday, July 13, 2011
3:00 - 4:00 PM
TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)

Abstract: Currently, there is a ban on overland commercial supersonic flight over the U.S. Manufacturers of business jets believe that it is possible to build economically-viable supersonic aircraft that produce quieter sonic booms. In order to determine if these quieter sonic booms, called “low” booms, are less intrusive and the noise exposure is acceptable to communities, new human subject testing must occur. The aim of this research is to determine objective measures that predict human response to low sonic boom waveforms and other impulsive sounds. At the start of this research, it was found that startle was an important factor in predicting people's judgments of annoyance. Preliminary models of startle and annoyance were also developed. To examine startle in more depth, a series of experiments were conducted to examine how physiological measures associated with startle compare with subjective ratings and to examine the repeatability these are these measures. While physiological responses associated with startle were found, these responses rarely occurred. In addition, there were large subject-to-subject variations in observed physiological responses. The ramification of these results on startle model development and recent modeling efforts will also be discussed.

Biography: Andrew Marshall completed his B.S. in mechanical engineering at the University of California at San Diego in 2005. During that time, he was also a summer undergraduate student at the Los Alamos National Laboratory, working in the area of supercomputing-based scientific visualization. He completed his M.S. in 2007 and is currently completing his PhD, both in Mechanical Engineering at Purdue University. His research, which has been conducted at the Ray W. Herrick Laboratories, is focused on understanding and modeling startle and annoyance evoked by low amplitude sonic booms and similar impulsive transient environmental sounds. Of particular interest in this research has been examination of noise metrics derived from recent models of time-varying loudness and comparing their performance in predicting annoyance with that of metrics derived from weighted sound pressure levels.

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For more information contact the technical host Garrett Kenyon, gkenyon@lanl.gov, 667-1900.
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